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ABSTRACT

This document provides criteria which are designed to be used by school administrators, professional staff, and community representatives to assess mathematics programs and to provide a basis for establishing goals in teaching mathematics. Other possible uses for the information generated by the criteria include: validation of exemplary programs and promising practices; self appraisal (by building, district, or community level); development of long-range goals; planning for staff development, inservice and training activities; and disseminating information and improving public relations. Major areas addressed include: (1) staffing; (2) leadership; (3) professional development; (4) diagnosing and prescribing; (5) scope and sequence; (6) resources; (7) programs; and (8) program evaluation. A rating for each criterion is obtained by using a "yes or no" response or by using a 5-item rating scale (not started, started/little progress, some progress, almost achieved, achieved). A district profile matrix is also provided. (JN)

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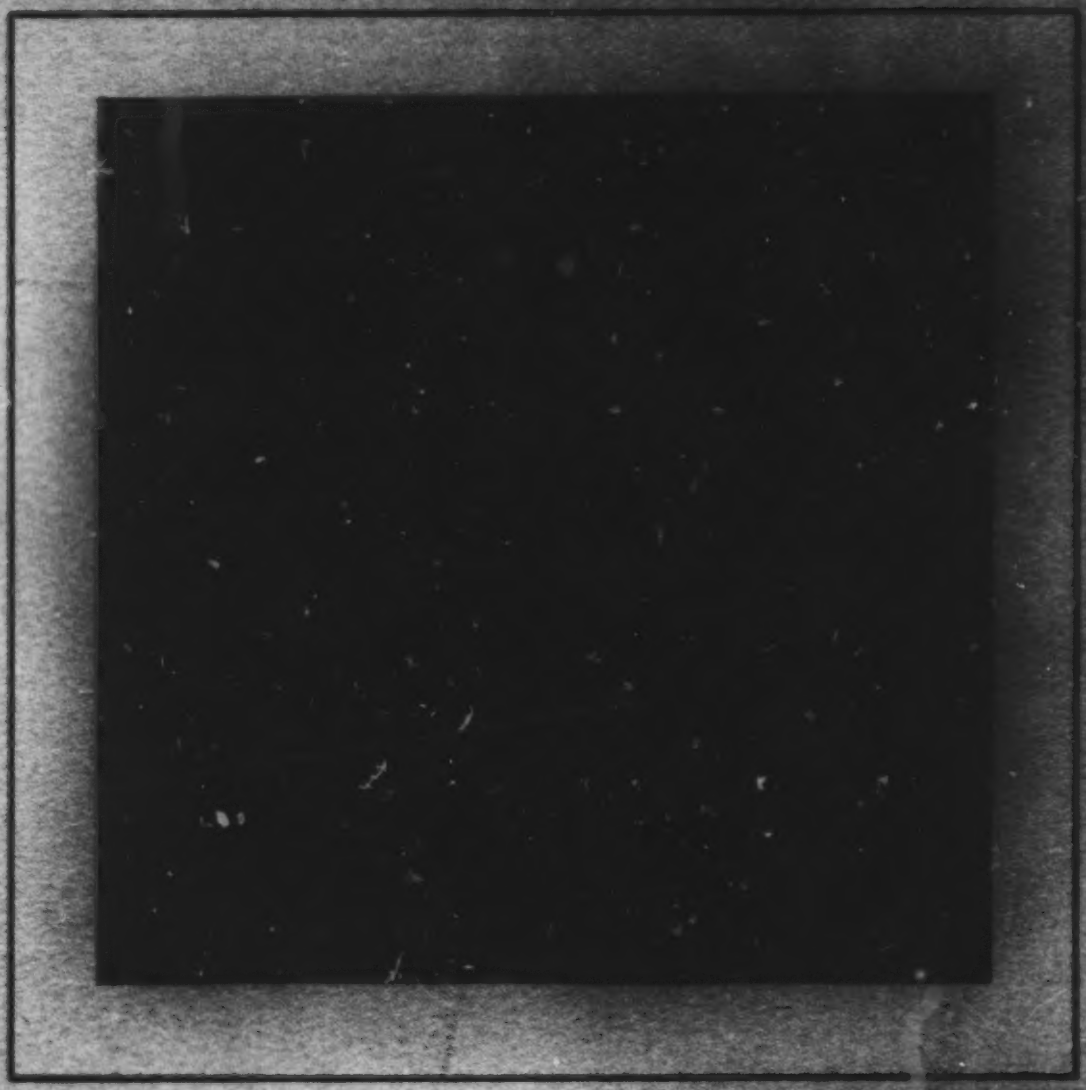
# Criteria for Excellence



## Mathematics

SE 046237

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**Criteria for Excellence**
**MATHEMATICS**

These criteria were designed to be used by school administrators, professional staff and community representatives to assess mathematics programs and to provide a basis for establishing goals in teaching mathematics. Other possible uses for information generated by these criteria include:

Validation of exemplary programs and promising practices
Self-appraisal (by building, district, community level)
Development of long range goals
Planning for staff development, inservice and training activities
Disseminating information and improving public relations.

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## CRITERIA OF EXCELLENCE FOR MATHEMATICS

### STAFFING

1. Classroom Teachers

   A. Are all math teachers graduates of an approved Teacher Education program, and do they possess Type A Alaska Teachers Certificates? Yes / No

   B. Do all elementary teachers have a minimum of nine semester hours in mathematics for elementary teachers including a course in methods of teaching elementary math? 1 2 3 4 5

   C. Do all secondary math teachers have a minimum of a college minor in mathematics for secondary teachers including a course in methods of teaching secondary math? 1 2 3 4 5

2. Paraprofessionals and Volunteers

   A. Is there an organized program of recruitment of paraprofessionals and volunteers? 1 2 3 4 5

   B. Is an appropriate training program provided for those assisting in math instruction, including training in: 1 2 3 4 5

      1. Instructional techniques appropriate to the duties of the paraprofessional or volunteer?
      2. Record keeping?
      3. Administrative framework?
      4. Physical plant?
      5. Materials?
      6. Competencies being developed at each level?
      7. Operation of equipment?

   C. Is there a continuing inservice based on assessed needs? 1 2 3 4 5

### LEADERSHIP

3. Has a qualified individual(s) been identified and given the authority, responsibility and time to develop and coordinate the mathematics program as follows:

   A. Does the coordinator understand the components of the total mathematics program and is he/she sensitive to the needs of students and teachers? 1 2 3 4 5

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**Rating Scale**:
(1) not started (2) started/little progress (3) some progress (4) almost achieved (5) achieved

| | | | | | |
|---|---|---|---|---|---|
| B. Does the coordinator provide the leadership and resources to foster the development, review and updating of an excellent mathematics program? | 1 | 2 | 3 | 4 | 5 |
| C. Does the coordinator hire well qualified personnel, or recommend for hiring, if not in a hiring position? | 1 | 2 | 3 | 4 | 5 |
| D. Does the coordinator insist on inservice teacher education in math? | 1 | 2 | 3 | 4 | 5 |
| E. Does the coordinator demonstrate a commitment to the mathematics program by presenting a strong case for budgetary support to the school board, the central administration, and the community? | 1 | 2 | 3 | 4 | 5 |
| F. Does the coordinator provide encouragement and resources for teachers to attend professional meetings? | 1 | 2 | 3 | 4 | 5 |

**PROFESSIONAL DEVELOPMENT**

| | | | | | |
|---|---|---|---|---|---|
| 4. Do those involved in the teaching of mathematics receive continuing inservice education in the application of mathematical skills as follows: | | | | | |
| A. Are inservice programs based on the ongoing assessment of program needs in mathematics instruction? | 1 | 2 | 3 | 4 | 5 |
| B. Are provisions made for participants to be involved in professional development activities? | 1 | 2 | 3 | 4 | 5 |

**DIAGNOSING AND PRESCRIBING**

| | | | | | |
|---|---|---|---|---|---|
| 5. Is an ongoing comprehensive system of evaluation designed to include: | | | | | |
| A. Proficiency evaluation for each student upon entry? | 1 | 2 | 3 | 4 | 5 |
| B. Ongoing assessment of skills? | 1 | 2 | 3 | 4 | 5 |
| C. Assessment of degree to which local goals have been met? | 1 | 2 | 3 | 4 | 5 |
| 6. Have personalized programs been developed to meet identified needs? | 1 | 2 | 3 | 4 | 5 |
| 7. Is the learner informed of progress, and does learner help to plan personal goals and objectives? | 1 | 2 | 3 | 4 | 5 |
| 8. In addition to the regular program, has provision been made for: | | | | | |
| A. Gifted and talented students? | 1 | 2 | 3 | 4 | 5 |
| B. Remediation of students? | 1 | 2 | 3 | 4 | 5 |
| C. Special interests of students? | 1 | 2 | 3 | 4 | 5 |

**Rating Scale:**
(1) not started (2) started/little progress (3) some progress (4) almost achieved (5) achieved

## SCOPE AND SEQUENCE

9. Is the mathematics program developmental, based on a scope and sequence of skills K-12 as follows:
   - A. Scope and sequence of skills have been adopted and are used in instruction and evaluation? 1 2 3 4 5
   - B. Horizontal and vertical articulation procedures have been established and are being followed? 1 2 3 4 5

## RESOURCES

10. Are resource materials and activities available and chosen in accordance with the competency of each student? 1 2 3 4 5
11. Is there a continual review and inspection of new materials? 1 2 3 4 5
12. Is ordering of materials carefully coordinated to meet program objectives? 1 2 3 4 5
13. Is a resource materials center accessible to users? 1 2 3 4 5
14. Does each center have a collection which contains current publications relating to mathematics education? 1 2 3 4 5
15. Are written guides provided the teachers for effective use of resources? 1 2 3 4 5
16. Are services of specialized personnel available as an integral part of the mathematics program? 1 2 3 4 5

## PROGRAM

17. Do some components of the mathematics program include development of:

| | | Yes | No |
|---|---|---|---|
| Algebraic concepts? | | _____ | _____ |
| Computer and calculator awareness? | | _____ | _____ |
| Development of mathematics? | | _____ | _____ |
| Geometric concepts? | | _____ | _____ |
| Graphs, making and reading? | | _____ | _____ |
| Measurement skills? | | _____ | _____ |
| Metric system awareness? | | _____ | _____ |
| Number theory? | | _____ | _____ |
| Numeration system? | | _____ | _____ |
| Operations involving: | Decimals? | _____ | _____ |
| | Fractions? | _____ | _____ |
| | Integers? | _____ | _____ |
| | Whole numbers? | _____ | _____ |
| Place value concepts? | | _____ | _____ |
| Probability and statistics? | | _____ | _____ |
| Ratio, proportions, percents? | | _____ | _____ |
| Reading mathematics: | Comprehension? | _____ | _____ |
| | Directions? | _____ | _____ |
| | Word problems? | _____ | _____ |
| Reasoning: | Logic? | _____ | _____ |
| | Problem-solving? | _____ | _____ |
| Recreational math? | | _____ | _____ |

**Rating Scale:**
(1) not started (2) started/little progress (3) some progress (4) almost achieved (5) achieved

| | | | | | | |
|---|---|---|---|---|---|---|
| 18. | Is accommodation made for varying learning styles, rates and abilities? | 1 | 2 | 3 | 4 | 5 |
| 19. | Has provision been made through extended learning for gifted and talented students? | 1 | 2 | 3 | 4 | 5 |
| 20. | Has provision been made for students with learning difficulties? | 1 | 2 | 3 | 4 | 5 |
| 21. | Is bilingual instruction provided as determined by the goals and objectives of the local community? | 1 | 2 | 3 | 4 | 5 |
| 22. | Is skill attainment continually recorded and maintained throughout the grades? | 1 | 2 | 3 | 4 | 5 |
| 23. | Do teachers of mathematics at all levels teach the reading skills that apply to mathematics? | 1 | 2 | 3 | 4 | 5 |
| 24. | Is the learner guided to realize how useful and enjoyable mathematics can be? | 1 | 2 | 3 | 4 | 5 |
| 25. | Is provision made to incorporate the findings of current research relating to how students learn mathematics? | 1 | 2 | 3 | 4 | 5 |
| 26. | Is a wide range of manipulative materials available for student use? | 1 | 2 | 3 | 4 | 5 |
| 27. | Is the physical facility adequate for the students' programs and the teaching style of the teacher? | 1 | 2 | 3 | 4 | 5 |

**PROGRAM EVALUATION**

| | | | | | | |
|---|---|---|---|---|---|---|
| 28. | Does the administrator responsible for the program have a planned procedure for evaluating the mathematics program? | 1 | 2 | 3 | 4 | 5 |
| 29. | Have lay members of the community been involved in evaluating the mathematics program? | 1 | 2 | 3 | 4 | 5 |
| 30. | Are teachers involved on a regular basis in program evaluation? | 1 | 2 | 3 | 4 | 5 |
| 31. | Do students participate in a planned procedure of program evaluation? | 1 | 2 | 3 | 4 | 5 |
| 32. | Are changes incorporated as needed? | 1 | 2 | 3 | 4 | 5 |

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**Rating Scale**:
(1) not started (2) started/little progress (3) some progress (4) almost achieved (5) achieved

Criteria of Excellence for
Mathematics

## DISTRICT PROFILE SHEET

*Mark your rating for each numbered item on a scale of 1 to 5 or any point in between.*

| | | Not Started 1 | Little Progress 2 | Some Progress 3 | Almost Achieved 4 | Achieved 5 |
|---|---|---|---|---|---|---|
| **STAFFING** | | | | | | |
| 1A | Teachers certified | | | | | |
| B | Teachers have nine hours elementary math | | | | | |
| C | Teachers have high school math minor | | | | | |
| 2A | Paraprofessional recruitment | | | | | |
| B | Paraprofessional program training | | | | | |
| C | Paraprofessional inservice | | | | | |
| **LEADERSHIP – program coordinator** | | | | | | |
| 3A | Knows components | | | | | |
| B | Fosters development, review | | | | | |
| C | Hires qualified people | | | | | |
| D | Insists on inservice | | | | | |
| E | Is committed | | | | | |
| F | Encourages professional meetings | | | | | |
| **PROFESSIONAL DEVELOPMENT** | | | | | | |
| 4A | Based on needs | | | | | |
| B | Participants involved | | | | | |
| **DIAGNOSING AND PRESCRIBING** | | | | | | |
| 5A | Proficiency evaluation | | | | | |
| B | Ongoing assessment | | | | | |
| C | Local goals | | | | | |
| 6 | Personalized programs | | | | | |
| 7 | Learner involved | | | | | |
| 8A | Gifted and talented | | | | | |
| B | Remedial students | | | | | |
| C | Special student interests | | | | | |
| **SCOPE AND SEQUENCE** | | | | | | |
| 9A | Use in instruction and evaluation | | | | | |
| B | Articulation | | | | | |
| **RESOURCES** | | | | | | |
| 10 | Activities to student ability | | | | | |
| 11 | Continual review | | | | | |
| 12 | Coordinated to objectives | | | | | |
| 13 | Accessible | | | | | |
| 14 | Current publications | | | | | |
| 15 | Written guides | | | | | |
| 16 | Specialists available | | | | | |

*(Continued on other side)*

| PROGRAM | Not Started 1 | Little Progress 2 | Some Progress 3 | Almost Achieved 4 | Achieved 5 |
|---|---|---|---|---|---|
| 17 Contains basics | | | | | |
| 18 Learning styles, rates | | | | | |
| 19 Extended learning | | | | | |
| 20 Learning difficulties | | | | | |
| 21 Bilingual instruction | | | | | |
| 22 Skill recordkeeping | | | | | |
| 23 Content reading | | | | | |
| 24 Useful/enjoyable | | | | | |
| 25 Current research | | | | | |
| 26 Manipulatives | | | | | |
| 27 Physical facilities | | | | | |

| PROGRAM EVALUATION | | | | | |
|---|---|---|---|---|---|
| 28 Planned procedure | | | | | |
| 29 Lay involvement | | | | | |
| 30 Teacher involvement | | | | | |
| 31 Student involvement | | | | | |
| 32 Changes incorporated | | | | | |

Based on Mathematics Criteria of Excellence, by:

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